Perspective: Central Intelligence Agency

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Buckminster Fuller once lamented: "The most important fact about Spaceship Earth [is that] an instruction book didn't come with it." I am happy to report that the national intelligence capabilities of the United States can help in putting together the instruction book. It's important to remember that intelligence is not simply information. Every scientist, researcher, or analyst knows well that mere information doesn't necessarily help you solve a problem. Usually we're swimming in information. What you need, of course, is the right information, made available at the right time—that's *intelligence*.

U.S. intelligence resources can bring much to the table—particularly our national overhead reconnaissance capabilities. Because of their superior performance during the Cold War, satellite and aerial reconnaissance systems are especially well suited to provide what we are now calling environmental intelligence. The story is now being told about reconnaissance from airframes such as the U-2, the SR-71, and the various satellite programs during the Cold War. In fact, the-Discovery Channel recently carried programs on the U-2 and SR-71 spyplanes. CIA's Center for the Study of Intelligence has also published a well-received history of CORONA, America's first satellite reconnaissance program. It's important that this history is emerging so the public can understand why these systems are important to national security and why we need to continue to invest in them.

It is clear why this is so. Similar systems that helped keep the peace during the Cold War by giving our leaders a clear picture of Soviet strategic power remain in service to help preserve post-Cold War national interests. Our overhead capabilities help our customers understand and respond to humanitarian crises, military developments, and potential flashpoints—such as the Taiwan Strait crisis earlier this year, or a territorial dispute in the Aegean that could have escalated to war, or the unstable situation on the Korean peninsula. Imagery helps our leaders monitor compliance with arms control treaties. It helps them gauge the success of economic sanctions against rogue nations. And it provides our joint military commanders critical near-real time intelligence to support and assess military operations.

Let me focus briefly on a specific post–Cold War challenge that illustrates how well-suited intelligence resources are for assessing the environment. You already know about the international drug trade that threatens our cities, our families, the fabric of our society. As you might expect, the intelligence community uses aerial reconnaissance to give law enforcement authorities the leads they need to identify the infrastructure of the drug trade. We can, for example, locate laboratories, storage facilities, and remote airfields used by traffickers.

What you might not know—because it's been secret until recently—is that we can use satellites to monitor vegetation almost as well as we can find armored personnel carriers. We've long used satellite imagery to estimate crop size in North Korea, for example, so that CIA can forecast shortages that will require food imports or that could lead to societal instability.

In fighting the drug trade, overhead imagery allows us to estimate the extent of narcotics cultivation and production in the major drug-producing countries worldwide.

In fact, CIA's imagery-based estimates of coca and opium crops are the most reliable way to predict cocaine and heroin production. U.S. policymakers and law enforcement officials depend on those estimates to gauge the size of the global narcotics threat so that they can map out and fine tune our national counternarcotics strategy and plan interdiction operations accordingly.

We know from our 1995 imagery-based estimates, for example, that despite aggressive crop eradication programs in Bolivia and Colombia, Andean coca production reached a record high last year. After making the necessary conversions from hectares of coca to production of coca leaves to the final product—the cocaine that hits our streets—the CIA estimated 1995 global cocaine production at about 800 metric tons. That *intelligence*—information from overhead imagery plus our expert analysis—is an enormously helpful tool for our policymakers to get a handle on this problem. And it's a big problem, because global interdiction efforts seized only 250 of that 800 (metric) tons of cocaine, leaving more than enough to satisfy our country's annual demand of 300 (metric) tons.

Last month, General Barry McCaffrey, who runs the White House Office of Drug Control Policy, cited CIA estimates, derived from imagery, on global opium production—which has doubled since 1988 and in excess of about 4000 metric tons a year. Four hundred thousand tons of opium will make almost 400 metric tons of heroin; and the annual heroin demand in the United States is about 10 metric tons. I wish the news was better, but intelligence is very often the bearer of bad news.

The good news is that we have the tools to help our country confront the challenges of the post-Cold War world. National reconnaissance systems, which unlocked some of the most important mysteries of the Cold War (What is Soviet bomber production? How many ICBMs does Moscow have?), can help us fathom Nature. Leonardo Da Vinci observed that "Nature never breaks her own law," but the challenge remains for us to find out what those laws are.

We are already seeing a trend towards the more frequent use of these systems to support U.S. environmental initiatives, research, and policy. As a result of an initiative by Vice President Gore, the MEDEA (Measurements of Earth Data for Environmental Analysis) team was formed in 1994. This group of about 70 scientists from academia, the private sector, and government advises the intelligence community on the use of national intelligence resources for the study of the environment. MEDEA is also responsible for organizing and making available data from all these systems—satellites, aerial reconnaissance, observations from U.S. Navy ships, and other sensors—that can reveal important and *unique* scientific information on a variety of environmental concerns, such as

- deforestation,
- changes in the temperature of the oceans,
- wetlands management,
- and radioactive contamination.

MEDEA recently cooperated with Russian scientists to produce a digitized oceanographic atlas of the Arctic Ocean region—the most comprehensive study ever done. This atlas, scheduled for release in February (1997), doubles the knowledge of the Arctic available in the public domain. It will be followed by similar atlases on Arctic meteorology and the ice pack. Eventually, this intelligence may help scientists under-

stand how the Arctic region affects and interacts with global weather patterns. Indeed, within hours after the 1986 nuclear disaster at Chernobyl in Ukraine, radioisotopes were detected in the Canadian Arctic. We need to know more about how that was possible. Another Arctic mystery concerns the fate of pollutants—including radioactive wastes dumped into Russian rivers during the Soviet era—that make their way into the Arctic Ocean. How will they affect U.S. and Canadian waters?

The Earth itself will show us the answers to the mysteries of our environment. As the prophet Job said centuries ago, "Speak to the Earth, and it will teach you." And U.S. intelligence resources can help unlock those secrets. One area where the Earth can teach us is the northern Sahara. MEDEA hopes that a historical analysis of satellite imagery of the movement of desert versus vegetation could shed light on how Atlantic hurricanes are born.

The leader of the Suquamish nation, the great Chief Seattle, spoke of this "interconnectedness" in the global environment when he said, "This we know: all things are connected like the blood which unites one family. All things are connected. Whatever befalls the earth, befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself."

The value of research conducted by MEDEA—and the unique role of national intelligence resources in understanding our changing global environment—is obvious. It's also clear that the benefits of this research belong to future generations—which makes it all the more imperative that we press on. The great French Marshall Lyautey once asked his gardener to plant a particular tree. The gardener objected that this tree was slow-growing and would not give shade for a hundred years. The Marshall replied, "In that case, there is no time to lose; plant it this afternoon."

We *don't* have to wait until the next century to see some real paybacks on the use of intelligence for environmental purposes. The intelligence community now routinely works with FEMA (the Federal Emergency Management Agency), the U.S. Geological Survey, and Department of Defense military commands, to help them in disaster response and monitoring. The same sort of overhead imagery that can detect ICBM launches or tanks hidden in the forest, for example, can help these agencies assess the conditions of roads and runways for relief efforts, monitor the extent of damage, or report on secondary threats from dams or nuclear facilities that may have been damaged, particularly after an earthquake.

This past summer, CIA's National Photographic Interpretation Center assisted the National Interagency Fire Center with imagery data that helped firefighters combat wildfires in Alaska, California, Idaho, Montana, and Oregon. This information on fire zones and perimeters was a vital substitute for data ordinarily collected by civilian aircraft, which had become scarce with the large number of fires out West.

Last year, local officials in the West Indies were alerted that imagery data pointed to the imminent threat of a volcanic eruption on the island of Montserrat. Four thousand people were evacuated until the danger passed. More recently—in fact, last week—we observed that a section of the crater looks like it may collapse, with possible catastrophic results for several villages south of the volcano. Again, residents have been warned of the danger.

We recently helped the Department of Energy save time and money in locating waste disposal sites from the 1950s at the Oak Ridge nuclear facility. We also are helping

the Navajo Nation with technology and training to exploit Landsat multispectral satellite imagery of its region in the Southwest United States. This is an exciting partnership with the young people of the Navajo, to involve them in scientific efforts to understand and better manage their natural resources and environment.

There are many other reasons to expect that we will increasingly use our intelligence capabilities with an eye on the environment. Environmental developments affect economies, populations, governments, our own military planning, and our diplomatic efforts. In fact, one of MEDEA's responsibilities is to advise the intelligence community on how the environment affects these more traditional intelligence issues.

Last month, a member of the Federation of American Scientists wrote the following in *Aviation Week and Space Technology*: "The best thing that the U.S. intelligence community could do for America, and itself, would be to recognize the public as a customer for its products." I can tell you that we are there already.

Last July, CIA Director John Deutch declared in a speech to the World Affairs Council in Los Angeles, "The environment is an important part of the intelligence community agenda. . . our job is to acquire the data and allow the scientific community to use them. . . the costs are small and the potential benefits enormous."

During the Cold War, the public benefited enormously from national intelligence resources. Peace was the dividend, and the public continues to benefit as these systems serve our national interests—not only keeping the peace, but keeping and preserving the environment.

Sixty-five years ago, Albert Einstein advised the students and faculty of the California Institute of Technology that: "Concern for man himself and his fate must always be the chief interest of all technical endeavors. . . in order that the creations of our mind shall be a blessing and not a curse to mankind. Never forget this in the midst of your diagrams and equations."

The men and women of CIA and the U.S. intelligence community are excited at their role in bringing about the wisdom of Einstein's words, that the fruits of their labors will be a blessing on mankind and the global environment.